GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST-OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, AUGUST 28, 1895.

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The Treatment of Small Seashore Places.

WE recently said that more intelligence and self-restraint should be shown in planting the grounds of summer villas and cottages; and that, when these qualities are generally developed, our small places will be much more beautiful, as exemplifying the fundamental virtues of simplicity and fitness. Nowhere will this truth be more conspicuously shown than in the aspect of our seashore villas; for nowhere is local character more marked than in seacoast localities, and fitness, therefore, more imperatively demanded in the work of man; and, as a rule, nowhere is simplicity more sure to be the quality most desired.

Of course, seashore situations vary much among themselves. There are some, as on the sandbanks of Nantucket, where the rough, wind-swept, semi-barren natural aspect of the spot could hardly be entirely overcome by art even with a vast expenditure of pains and money. Here, a simplicity so great that it need hardly be called art at all seems prescribed. Here it is best to do as little as possible—to aim chiefly at a moderate degree of neatness, to plant only a few hardy vines to relieve the nakedness of the house itself, and to content one's love for beauty with the splendid panorama of the ocean itself. From situations like this the range is wide, up to those beautiful, varied, rocky and tree-clad regions, rough as compared with valley countries, yet rich in luxuriant undergrowths of shrubs, creepers and flowers, which form a great part of the northern New England shore, and to those others, lying along more sheltered coasts, like those of Long Island Sound, which may have almost, yet not quite, the same character as though they were not near the salt water at all.

In each of these good taste decrees that the local leadings of Nature should be followed by man in his attempts at improvement. Where Nature's plantations are luxuriant, luxuriance may be the planter's ideal; where she is parsimonious he should content himself with adding a little more, and not endeavor to make his place look as though he would have preferred to live where she had worked in quite a different mood. Even if, in such situations, he succeeds in growing garden trees and flowers better than might have been expected, and even if, intrinsically considered, they are well disposed, still he may not achieve genuine success; for even pretty plantations may look as inappropriate and inartistic, in a region naturally devoid of much vegetation, as would a treeless place in the Connecticut valley. If a planter protests that he loves luxuriant vegetation, cannot live comfortably without much shade and many garden flowers, and dislikes the open, airy, empty look characteristic of many stretches of seashore, then the only answer is that he had better settle in some other spot. The real lover of Nature sees that these breezy seashore stretches have a beauty of their own which can easily be spoiled by man's tampering hand, but cannot really be transformed into beauty of another kind. And it is pleasant, once in a while, to find an instance where this beauty has been perceived, respected and enhanced, instead of being denied and spoiled, by the owner of a summer house.

We have in mind just now two summer villas of an expensive class which stand next one another on a beautiful reach of seacoast near one of our largest New England watering-places. The outlook is south-easterly, and the coast line is formed by long, smooth, sloping shelves of reddish rock, strewn with picturesque bowlders, over which the waves break in magnificent masses. Where the adjoining soil has not yet been improved it shows stretches of flat meadow, or of old pasture-land bearing scattered rocks and growths of low shrubs and vines. Where it has been improved, many varieties of taste are revealed, many differences in treatment may be noted. But the two contiguous places to which we especially refer exhibit the extremes of intelligent self-restraint and of unintelligent self-indulgence, in both architectural and gardening art.

In one, the house, which stands quite close to the rocks, is very large, but long and low, as it should be to harmonize with the level lines of ocean and shore, and is devoid of the strongly accentuated features which are over-conspicuous in such situations; its roofs are red and its walls are of gray weather-colored shingles; and it is covered with vines, chiefly Japanese Ivy and Honeysuckle, and set closely about with shrubs, to a degree which suffices to bind it agreeably to the soil and prevent any look of bareness, and yet does not destroy its architectural character or give it the air of being smothered in foliage. With this exception nothing has been done to the place (which contains some twelve or fifteen acres) except to plant vines also along the low stone wall that divides it from the highway, and to cover its slightly rolling expanse, here and there broken by low masses of rock, with well-kept grass. No result could be more simple; but in such a situation it is beautiful. It shows as plainly as the most elaborate plantations the careful guardianship of man, and it satisfies the mind as well as the eye, proving that those who wrought it appreciated the chief attractions that Nature had bestowed upon the spot—its magnificent outlook over the sea, and its openness to refreshing breezes, so tempering the sunshine that the shade of trees is not required.

Adjoining this we find a place rather larger in extent, where the ground is much more broken and rocky, and where, in consequence, a still higher, because more picturesque, degree of beauty might have been attained by a suitable method of treatment. But here the house is lofty as well as large, and is contorted with eccentric features. Every part of the place is cut up with paths and shrubberies, clumps of trees, flower-beds and small architectural constructions, and even the stable looks as though it had tried to be a little mediæval castle. Not far from the highroad rises a huge rounded rock; by its base runs the approach to the house, and on the other side of this a stone turret has been built, which assists the rock itself to support an ornamental iron gate. Moreover, a stairway climbs around the turret, and a bridge has been thrown across, above the gate, from the turret to the rock, thus producing a purposeless structure as ugly in effect as it is aimless in conception. And between this structure and the highroad, along both sides of the driveway, are crowded plantations of hardy flowering plants—a flower

garden just where it should not be, away from the house, exposed to the dust of the roads and to the easy depredations of any passer-by. An immense amount of money must have been spent upon this place—many times as much as has been expended next door. But it has all been spent in doing what ought not to have been done. The result is far less pleasing than if the spot had been left in its natural roughness, for now it has no dignity and no consistency with its surroundings. Over-elaboration and trumpery adornment are always out of place, but they appear especially feeble and petty and vapid in the presence of the strength and sublimity of the sea.

The Social Use of Gardens.

WHY do we not have more garden parties; or, rather, why do we not have more gardens where parties worthy of the name can be held? During our warm American weather all other entertainments seem insignificant beside the elegance and beauty of an open-air reception with gardenesque surroundings of fitting character. Attractive people may successfully entertain their friends in a bare lot, but they will find it easier, and appear themselves to even better advantage, with surroundings of shade trees, soft lawns, flower-scented air, sun-lighted fountains and beds of blossoms. Accompaniments of this sort help to inspire and develop the thought and sentiment suited to festive occasions. There is no limit to the richness of the setting that can be given to outdoor entertainment. Music is never sweeter than in the open air, and the histrionic art is never more effective—as has been proved from the days of Grecian poets to those of our own actors—than it is with a greenwood background.

Gardens for entertaining must be gardens in a broad and true sense, not mere collections of plants. They must be fitted for human enjoyment rather than for the production of crops of flowers. The most elaborate of temporary decorations appear commonplace beside the living verdure and fragrance of a well-ordered garden; no tapestry or embroidered hangings can compare in grace with vine garlands and banks of foliage, and the shade of a silk pavilion is vulgar when compared with that of a noble ancestral tree.

The formal style of gardening is in many respects well adapted to social festivity, but it is not essential. Gardens for such a purpose need not be of great size, for we cannot hope to rival Versailles or Hampton Court, but we can have open spaces of grass, broad walks shaded by trees and bordered by masses of shrubbery and flowers. Only the very wealthy can afford grounds which rival in splendor those of royal villas. It is not possible for all of us to have noble avenues, broad terraces and elaborate gardens, but all who have gardens of any kind can so arrange them that they will be pleasant places for receiving our friends.

With our varying seasons we should live in the open air whenever it is possible, and when it is pleasant no country on the earth has more bracing weather than the eastern United States. For an impromptu party a delightful day is often the only excuse needed, but elaborate functions, where invitations must go forth some time before, may be marred by capricious weather. To afford shelter from showers and for various other reasons garden structures should have an important place in garden plans. These structures may range all the way from rustic arbors to elaborate banqueting halls with all the charms of architecture and furniture that designers can create, but the most desirable for American homes, it seems to me, is the old-fashioned summer-house, built in a style to correspond with the main structure, but detached and set in some pleasant part of the grounds in such a way as to have the charm of a separate place. Perhaps, the most useful service these have rendered from colonial times until now is as summer-parlors, where the family can enjoy the society of friends amid surroundings that enhance the delights of summer more than our winter quarters can do. As they are likely to be used more continuously than any apartment in the dwelling while warm weather lasts, there seems no good reason why thought and labor and money should not be expended upon them according to the ability of the owner. A musical family would naturally give such a place somewhat the character of their tastes, and musical instruments would become a permanent belonging. Those who love to entertain at luncheon would like it more of a dining-room, and the five o'clock tea would rarely be taken elsewhere. An abundance of seats to accommodate the company, large or small, is essential, and furnishings intended for permanent garden use are more in favor than those brought out for a temporary occasion.

Even now no places are more attractive than our many gardens, from the first profusion of roses in June until the rich autumn colors fade into the gray of November. If our lives become more intimately associated with our gardens the benefits to each will be mutual, and the results will have a noticeable bearing on the social habits of the country.

New York. *John De Wolf.*

Notes on Western New York Woodlands.—I.

THE changes made in the amount and character of the forest covering of western New York within the past fifty years have been very marked. Though the section was old in the middle of the century when compared with the regions farther west, it still retained much woodland which has since been cleared. The land had mostly gone into the hands of settlers in the first quarter of the century, and the rapid removal of the timber had ceased, except in the Pine-lands of the hills which form the northern terminus of the Alleghanies. The pioneers and the children who generally succeeded to their fathers' estates, grew tired of their long struggle to subdue the wilderness, or deemed a generous supply of timber necessary for the farm. Hence there came a lull in the clearing process when trees enough had been removed to suit the immediate demands of agriculture.

The region generally is one of hills and valleys, and few farms were devoid of swampy land. Though the soil of the swamps was rich, it was costly work to drain them. The timber of the swamps was extra large and heavy, and this made it more toilsome to clear them, so the trees in the swamps were spared longer than those on the drier uplands or on the hills. Then a good amount of swamp-land was required for the oak and black ash it furnished for fence timber, for the old-time rail fence made liberal demands upon the forest. The timber of the upland in the best agricultural sections was largely beech and maple, which made the best of firewood, and an abundance was left for this purpose. The fire-place was still used extensively, and it demanded more wood than the stove that was supplanting it. Nearly every farm, too, had its sugar-bush, whose annual tapping was a matter of necessity, for the sugar for the household principally came from the Maples, and this fact protected the trees. As the Muscovado and the white sugars became cheaper, however, and labor more costly, less maple sugar was made, and many sugar-bushes were cut down. The increase in the price of maple sugar has of late rather stimulated its production, and where trees enough are left it has become a matter of profit once more, and the destruction of the Sugar Maple is again checked. The use of wire for fencing has decreased the demand for timber, except for posts, and even iron is taking the place of these in many cases. So the preservation of trees for rail timber has nearly ceased, although oak and chestnut are still required for posts.

As the cities and villages sprang up there came an increased demand for firewood and charcoal, and the forests left by the pioneer were more and more curtailed. With much of the labor done in the winter, the coal-pit and the cutting and marketing of wood became profitable to the farmer. This continued till mineral coal checked, and has finally

largely supplanted, wood as fuel. The price of wood did not increase, and the greater cost of labor lessened the profit so much that it checked further clearing. Though an occasional piece of woodland may now be cleared, the limited call for wood is generally met by cutting the older trees and by thinning the woodlands.

Still another cause has worked unfavorably to the forests, and somewhat curiously shows the operation of economic forces. As the children of the farmer grew up, many of the sons left their homes for the cities, or sought their fortunes in the west; many farms were therefore sold, since they could not be profitably worked by hired help alone, and the proceeds of the sale generally furnished a competence to the owner. They were mostly sold subject to a mortgage, often a heavy one. Under such conditions much timber was cut and sold to pay the debt or to bring more of the land under cultivation. Farms with a large amount of woodland were purposely bought with this end in view. Some, on which fifty years ago the proportion of forest to cleared land was from a fourth to a third, have been nearly stripped of timber, so that now not a tenth part is woodland. It was at times a fruitless struggle on the part of the debtor, and the farm came back to the mortgagee with its condition greatly changed. It is safe to say that the forest-covering has been reduced to one-fourth the area it had fifty years ago. This is taken as a point of departure for comparison, partly because the land was at that time largely in the hands of the first settlers or their children, and partly because my observation goes back to about that time. Account has not been taken of forest fires, although local damage has often been occasioned by them. The timbered areas are too circumscribed and the population too dense for fires to gain much headway. The worst fires to deal with are those which get established in peaty swamps in a time of drought, which slowly eat their way along and usually persist till they are drowned out by fall rains or smothered by a covering of snow. Nor is account taken of pasturing the woods. The damage from these two causes results more in the thinning of the forest-covering than in the reduction of its area.

Chicago, Ill. *E. J. Hill.*

Foreign Correspondence.

London Letter.

CRINUM PURPURASCENS.—According to information recently received at Kew, this Crinum is practically aquatic in its habits. It grows in rivers and lagoons near the mouth of the Niger River, on the west coast of Africa, the Leek-like bulbs buried in mud often three feet below the surface of the water, and the long strap-shaped, partially submerged leaves are so altered in character as to resemble certain sea-weeds. This species was first introduced into cultivation in 1877, when it flowered at Kew, and was figured in *The Botanical Magazine*, t. 6525. It continued to be an exceedingly rare plant in gardens until about five years ago, when the late Mr. F. Horsman, of Colchester, introduced a quantity of it. At Kew it is grown in pots in a stove and treated the same as any ordinary Crinum, except that a saucer holding water is placed under the pot while the plant is in active growth. Now, however, it is to be tested as an aquatic. It has crowded umbels of stellate flowers about six inches across, white, tinged with rose, and very fragrant. It blooms all through the summer.

HÆMANTHUS KATHERINÆ.—This is a magnificent greenhouse bulb easy of cultivation, and producing annually umbels of rosy scarlet flowers as large as a child's head, and lasting about a month. I am certain that if some enterprising nurseryman in the southern states were to grow this plant by the thousand he would find as ready and large a market for it as the Bermuda Lily has now. It can be multiplied by means of bulb-scales in the same manner as Hyacinths, and it produces seeds freely. There are three large heads of the flowers in the Cape-house at Kew now, and I am surprised at the large number of horticulturists who are unacquainted with it. They in their turn are astonished when informed that the plant has been in cultivation in England nearly twenty years (it was introduced from Natal by Kew in 1877), and that it is one of the handsomest and most manageable of all the fine bulbous plants which we owe to south Africa.

DENDROBIUM PHALÆNOPSIS.—So far this plant has been practically a perpetual flowerer. We have never been without its blooms since it was first introduced in quantity. Whether this is due to the plants having been obtained from various importations received at different times of the year I cannot say, but, at any rate, its behavior so far has been quite exceptional for a Dendrobium. Our plants are grown in the hottest and moistest house we have, and they are placed on a shelf close to the highest part of the roof-glass, where they get comparatively little shade. Here they grow well, forming pseudo-bulbs from a foot to eighteen inches high, which flower as soon as they are mature, and not resting for a time as most of the Dendrobiums do. After the flowers fade the plants are not watered for a few weeks, when new growth appears, and the hot moist treatment is repeated. We have no tropical Orchid that will keep on flowering like this. May one again appeal to growers to drop the name Schrœderianum for this plant? It is simply D. Phalænopsis, a variable species, as we now know it, but requiring no third name, except in the case of individual varieties, such as album, etc. There are more plants of this Dendrobium in cultivation now than of any other species, except, perhaps, D. nobile.

SOBRALIA VEITCHII.—This is a hybrid raised last year by Messrs. J. Veitch & Sons from Sobralia macrantha, crossed with S. xantholeuca. The flowers are as large as those of the latter species, white, tinged with lilac, the lip more deeply shaded with lilac, with a blotch of yellow in the throat. A plant now flowering at Kew, and obtained as S. xantholeuca, is practically identical with the hybrid raised by Messrs. Veitch, and as the two parents are found growing together wild, there is no reason why nature should not have anticipated the nurserymen and made the same cross. I believe there are more species of Sobralia admitted than is warrantable, some of them having no other distinguishing character than mere flower color. A plant of S. xantholeuca now flowering at Kew differs from the type in having brownish red blotches on the front of the lip, a difference which was looked upon by a distinguished orchidist as "almost sufficient to constitute a new species." There are many such among Orchids.

TWO NOBLE BEDDING PLANTS.—One of the most beautiful pictures to be seen out-of-doors at Kew this year is a round bed twenty feet in diameter, filled with Galtonia candicans and Gladiolus Brenchleyensis. The bed is in an open position on one of the lawns close to one of the principal entrances, no other flowers being near it. The Galtonia spikes are about three feet high, the Gladiolus a little shorter, and they are so thick that no soil can be seen, nothing but a great mass of bright scarlet and nodding bells of white. The production of such an excellent effect is very easy; a sovereign, about, would purchase the bulbs, which should be planted early in the spring in good soil, but not in strong manure, which is often fatal to bulbous plants, especially of the Gladiolus kind.

PAULOWNIA IMPERIALIS is a grand plant to use for subtropical gardening. At Kew it is planted in a very large oblong bed, on a lawn sheltered by a shrubbery on the north side and exposed to full sunshine on the south. The plants, which are about three years old, were cut down to within six inches of the ground in early spring, and when they started to grow all the buds except one on each plant were removed. Watered in dry weather and mulched with manure, they have grown to a height of four feet, and the beautiful palmately lobed leaves are each from a foot to eighteen inches in diameter. It is impossible to have anything more effective as a foliage-plant when seen in the mass than this. Ferdinanda eminens, Castor Oil, big-leaved Solanums, Wigandia Caracasana and similar large-

leaved plants, used for the same purpose, are not equal to this. Of course, the leaves are much smaller when the plants are allowed to grow up into trees; it is only when treated as above that they produce such large leaves. I have heard of plants thus treated which produced leaves two and a half feet across.

Senecio Japonicus.—A few weeks ago I told you of a very striking species of Senecio grown in the open air at Kew, namely, S. macrophyllus, a Caucasian plant. Almost as striking, and at the same time of totally different habit, is S. Japonicus, or rather a giant form of it, which is grown at Kew by the side of the type. The variety has pedately divided leaf-blades eighteen inches across, elevated on stout erect cylindrical petioles three feet high, the whole leaf being remarkably similar to the leaf of a gigantic Arisæma. The stems, which bear smaller leaves, rise erect to a height of six feet and bear terminal clusters of orange-yellow flowers, each about three inches across. The flowers began to expand three weeks ago and there is still a fine display. I suspect that this plant would attain to still larger proportions if grown as a subaquatic. It is perennial, quite hardy, and was introduced from Japan in 1866. Another name for it is Erythrochœte palmatifida.

Daturas.—Some of the annual species of this genus are handsome enough to use for summer bedding, in large gardens and parks at any rate. At Kew two species are thus grown, namely, Datura meteloides and D. fastuosa. The former, which is a native of California, here grows about two feet high and bears white flowers, sometimes tinged with purple and larger than the flowers of the well-known greenhouse D. suaveolens. By removing some of the leaves the flowers are well exposed, and in sunny weather the beds are crowded with the big white trumpets. D. fastuosa is a most variable plant, and all its varieties are beautiful. The so-called new D. Cornucopia is merely a form of this. All the double or hose-in-hose varieties are worth growing, and they come true from seeds. We find it advisable to sow the seeds in March in a frame and grow the plants in pots till June, when they are put out in the beds. A cold, wet summer is against their good behavior, but such a hot, dry season as we have had here has been in their favor.

London. *W. Watson.*

Plant Notes.

The Hazels.

ONLY two distinct species of Hazels, or the genus Corylus, have been generally recognized as native in North America north of Mexico; but Dr. J. N. Rose has recently pointed out (Garden and Forest, viii., 263) distinctions which he considers are sufficient to establish a separate species heretofore regarded as a west coast variety of C. rostrata, and known as C. rostrata, var. Californica. The Beaked Hazel, C. rostrata, is common over a wide territory in the eastern United States and Canada. Growing over much of the same region, but apparently not extending so far north, is found the other American species, C. Americana. This, in fruit, is readily recognized by the broad leafy, more or less glandular hairy husk or involucre which incloses the nut; and without fruit it may generally be known by its glandular bristly young twigs, its broader, rather thicker, rougher and coarser leaves, which often have some short glandular hairs on the upper surface and on the veins beneath; by its larger and stiffer and coarser habit of growth, and in winter by its much longer, stalked, nodding or pendulous male catkins. C. rostrata, in fruit, is at once recognized by the densely bristly, more or less tubular husk or involucre which grows over and above the nut. When fruit is not present for identification the plant may be known by its thinner, narrower, more pointed leaves; its more slender branches and general habit of growth; by its young twigs, which are either glabrous or nearly glabrous, or are thinly covered with soft, more or less appressed glandless hairs. In winter the plant may be distinguished by its short, nearly sessile or stalkless, erect catkins. It appears to be hardier and to grow farther north than the other.

As Dr. Rose has given a technical description of Corylus rostrata in the article referred to, it is unnecessary to add more here in description of the species or explanation of the drawing (see page 345) made by Mr. C. E. Faxon.

The figure shows some of the variations which may be found in the shape and appearance of the fruit as it grows in New England. Occasionally plants are found with the husks much split, exposing the nuts. The sweet edible nuts also vary somewhat in size and shape. They are often collected for eating, but the dense covering of slender, rigid, deciduous bristles by which the involucre is protected renders the collecting of the fruit a disagreeable work, as the bristles easily penetrate the skin.

In the large Oak family, or Cupuliferæ, in which the Hazels have usually been classed, they appear to have closer affinities with the Hornbeams, Carpinus, and the Hop-Hornbeams, Ostrya, than any other familiar genera. The analogies will be noticed more particularly in a comparative study of the flowers and fruit. The male or staminate flower-buds in the form of catkins are exposed and conspicuous on the Hazels during winter, while the female or pistillate flowers are concealed within axillary scaly buds. The female flowers are mostly, but not always, in buds nearer the apex of the branch than the male blossoms. At least, this is true with Corylus rostrata and C. Americana, but the latter commonly has a cluster of male catkins at the apex of a twig, with female flowers intervening between the male blossoms lower on the branch. They may, however, be more or less intermixed, and on some foreign species female flower-buds may be found growing on the base of the stalks of male aments.

With the first warm days in spring the male catkins elongate and mature pollen, and from the female flower-buds there are protruded a number of short thread-like dark red styles which receive the pollen that eventually fertilizes the ovules. After flowering, the plant seems to remain nearly dormant for a considerable period, sometimes two or three weeks, after which more evident growth is developed. Watching the progress of the buds and young growths it will be found that the some-time fertilized female flowers are carried out on the tips of new leafy shoots, and the shoots are well grown before the female flowers or young fruit make any visible development or become at all noticeable on the extremities. It is unusual among our trees and shrubs to have blossoms produced from axillary buds on old shoots so early in the season, and have these buds afterward develop into leafy branches several inches long, bearing the fruit on the apex. Carpinus and Ostrya are somewhat analogous, but in these the young twigs have burst from their buds and have made some growth and produced leaves before the flowers are fertilized.

In most trees with which we are familiar the flowers and fruit are either produced on the old wood or on new growths, the flowers developing with or after the new branches. Little that might be called an ovary and no ovules can be detected in the Hazels until long after the plants have flowered or until the foliage has become well grown.

The development of the flower and fruit of the Hazel is interesting and well worth attention. The male catkin is composed of numerous flowers inserted on the under side of overlapping bractlets, each bractlet bearing a single flower composed of about four divided stamens which appear to bear eight anthers, but these are generally assumed to represent half anthers which have become separated. Each scaly bud producing pistillate or female flowers bears from two to half a dozen or more blossoms, forming what may really be regarded as a densely crowded head or spike. Each flowering scale, in the female cluster, bears two flowers side by side on the inner surface, each blossom bearing two styles. The flowering scale or bract is more or less accrescent and may be found much

enlarged and leaf-like at the base of the mature fruit. What finally forms the leafy husk or involucre around the nut exists around the young ovary as a little girdle or two tiny scales with laciniate edges.

developed nut and involucre attached to the same bract; or both flowers may be abortive, their place being indicated in late summer by the enlarged bract and involucres crowded among the fully developed fruits.

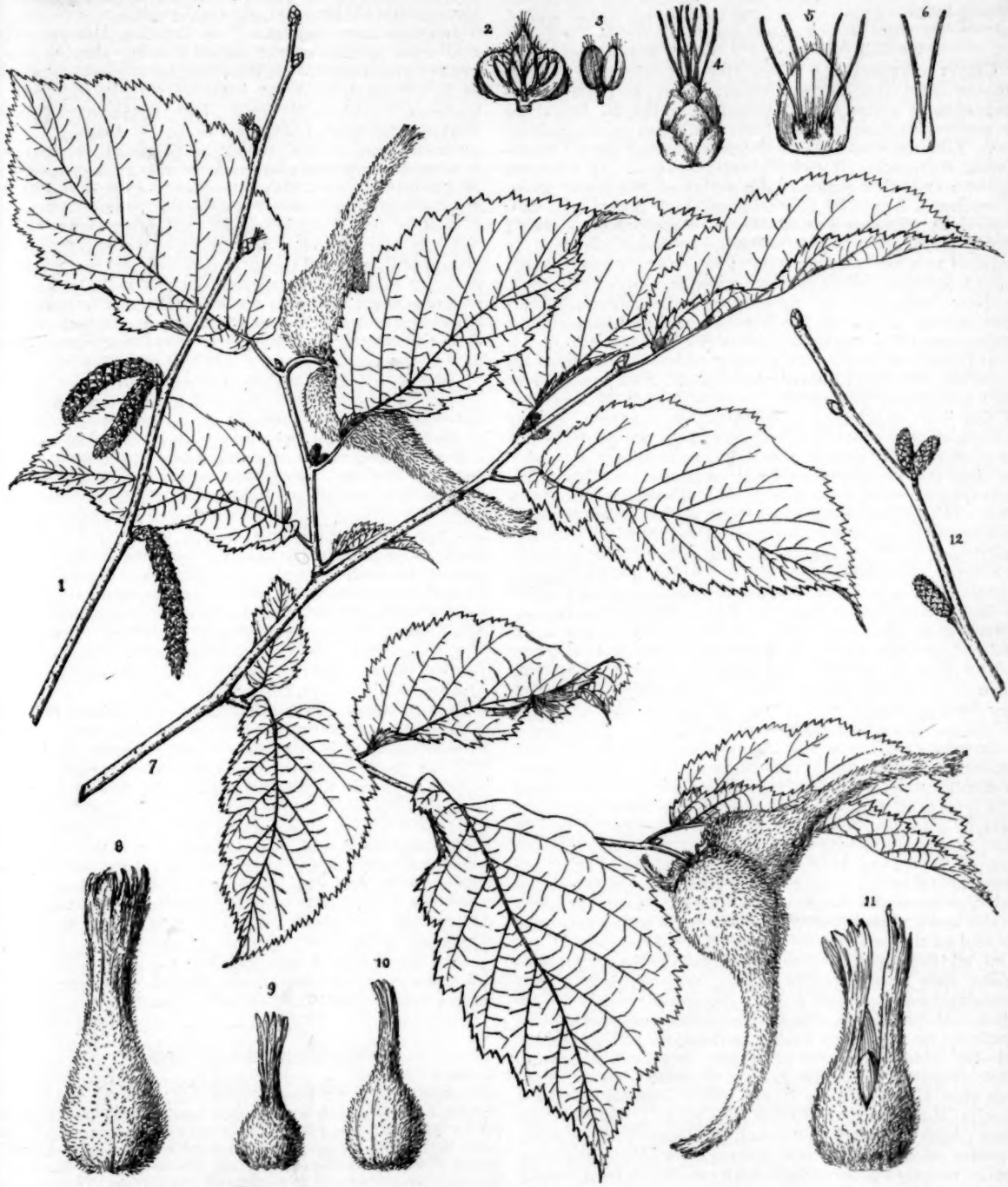

Fig. 48.—Corylus rostrata.—See page 344.

1. Flowering branch. 2. Scale from male ament. 3. Stamen. 4. Bud with female flowers. 5. Scale with two female flowers. 6. Pistil. 7. Fruiting branch. 8, 9, 10, 11. Different forms of fruit. 12. Winter branchlet.

Very often one of the two flowers on the bract is not fertilized or does not develop, but the involucre grows considerably and may be found crowded near the base of its companion flower and ovary, which has grown into a fully

Among many interesting Japanese plants which are identical with or nearly related to our eastern American species, there is a Beaked Hazel very similar to ours, and which the botanist Maximowicz regarded as a variety of it,

naming it Corylus rostrata, var. Sieboldiana. It has the long tubular beaked, bristly fruit of the Beaked Hazel, and herbarium specimens show that it is nearly like ours in twig and leaf, but some specimens show both appressed simple hairs and erect, glandular hairs on leaf-stalks and young twigs.

Arnold Arboretum. *J. G. Jack.*

Celtis occidentalis. — This tree, which is variously known as the Hackberry, the Sugar-berry and the Nettle-tree, extends across the continent from the St. Lawrence to eastern Washington, and from Florida to northern Mexico. Like the Red Cedar and other trees of almost continental distribution, it varies greatly in habit. In southern Indiana and other points of the valley of the lower Ohio, it reaches a height of one hundred and thirty feet, with a straight, slender, smooth-barked shaft, which is often eighty feet high to the first limb. In some places it is reduced to a low shrubby form; in others it has a short stout trunk and widely spreading and pendulous branches. In New England it is a comparatively low, broad, round-headed tree, with branches sometimes pendulous, and as it appears in Hudson County, New Jersey, just across the river from this city, it has usually a broad flat top, with branches arranged in horizontal strata. Some account of the variations of this tree can be found in vol. iii., page 39, of this journal, where it is described and figured. At this season, when the leaves of so many trees are browned by fungi or eaten by insects, the light green foliage and airy habit of the Hackberry make it conspicuously beautiful. In large places, where a variety of arboreal growth is desired, it should not by any means be neglected, for it grows rapidly and endures well the trials of our frequent midsummer droughts. The leaves remain late in the autumn and turn to a light yellow before they fall, and it is altogether a cheerful-looking tree. Celtis Mississippiensis is another species of Hackberry found from southern Illinois southward. Where it is associated with C. occidentalis in the lower basin of the Ohio River it is the smaller tree, but its good habit and rapid growth make it desirable for ornament in those parts of the country where it flourishes, and it is now very generally planted as a street tree in the towns and cities of central and western Texas.

Hypericums.—Shrubs of this genus, although they are somewhat stiff in form, vary in habit from erect to prostrate, while their bright flowers, which continue to appear for a long time, make them a most useful and interesting class of plants at this season, when comparatively few other shrubs are in bloom. Of our native species Hypericum prolificum and H. Kalmianum are about equal in ornamental value, the latter having golden-yellow flowers an inch across, while those of H. prolificum are smaller, though more abundant. H. prolificum is rather the more graceful of the two and more graceful in habit than H. aureum, which bears large flowers one and a half to two inches across, with orange-yellow petals, and keeps in bloom throughout late July and August. H. densiflorum is closely allied to H. prolificum, and has fine foliage and bears comparatively small flowers in great profusion. H. gallioides and H. adpressum are practically herbaceous plants, although woody at the base. Mr. Jackson Dawson suggests that H. adpressum is admirably adapted to work in with the shrubby species, as it will form a low dense carpet covered with small golden-yellow flowers. A group of shrubby Hypericums, with H. adpressum closely occupying the space between them to a height of six inches, would make a novel and attractive foreground for large park shrubberies. Of the foreign species the half-woody H. calycinum is most satisfactory, for, although the low stems are killed back every winter, flowering shoots come up from the creeping root-stalks. H. hircinum is nearly two feet high and blooms in midsummer. H. patulum and H. oblongifolium are Asiatic species which are quite hardy in the middle states. The new hybrid H. Moserianum, which was obtained by crossing H. calycinum and H. patulum, has been found hardy enough to winter in sheltered positions in this latitude if it is protected with some light litter. It grows to a height of about two feet and bears in great abundance flowers which are three inches in diameter and of a clear yellow color through the summer and autumn months.

Lonicera sempervirens.—The Trumpet Honeysuckle is one of the prettiest of our native twining shrubs, and one of the handsomest of all the climbing Honeysuckles. It is in flower now, as it has been since early June, and will continue to be until frost. The well-known trumpet-shaped flowers are nearly two inches in length, bright red on the outside, yellow within; quite a number of them are produced in whorled clusters from the axils of the leaves. The plant requires a little attention to make it do its best, and the situation it seems to delight in especially is against a wall or fence facing south. A rich porous soil to a depth of about two feet and plenty of water in the growing season will be found to suit it exactly. Its name indicates that the foliage is evergreen, but this is only true in the southern states, and it is deciduous in this latitude. The bright red or orange-colored berries are distinct additions to the beauty of the plant. It may be increased at this time of the year either from cuttings or by layers.

Daphne Indica.—This plant is well known for its value in decorating conservatories, and, although its habit is not of the best, it is indispensable for the beauty and fragrance of its flowers, as they serve long and well when cut. Mr. Oliver writes that the shrub has endured the winter out-of-doors in the vicinity of Washington, where the mercury often falls below zero. He knows of plants which have stood out without protection for five or six years, and they are not only thoroughly at home, but they bear flowers much more abundantly than the specimens usually found in greenhouses. The plants, which are of both the white-flowered and red-flowered varieties, grow near the top of an elevated piece of ground on a southerly slope and in a sandy loam, where the drainage is perfect. It would be interesting to know just how far north this plant will flourish out-of-doors, for, wherever it will survive, it will be a splendid addition to our shrubberies.

Dierama (Sparaxis) pulcherrima.—This plant, like most of the other species in this section of the Irideæ, is a south African plant, and is figured in *The Botanical Magazine*, t. 5555, as Sparaxis pulcherrima. It is an evergreen bulbous plant, and is said to prefer wet places in its wild condition. Its leaves are two or three feet long, robust, stiff and leathery, and the flower-stalks are six feet high. Mr. Edmund D. Sturtevant writes that the plant flowered with him in Los Angeles, California, during the month of July, and it pleased him exceedingly. It is growing in rich black loam, and is never dried off. As it grows in California the bell-shaped flowers are suspended from almost invisible thread-like stems along the upper portion of the stalks. There are several on each stem, and they open in succession. They are rich deep pink, sometimes shaded with crimson, and have a grace which can hardly be described.

Cultural Department.

Fighting the Elm-leaf Beetle.

WHILE it is possible to destroy the larvæ of the imported Elm-leaf beetle with a hand-spraying pump, a powerful one is needed to reach the tops of high trees, and it is a good deal of trouble to get the discharge-pipe lifted high enough by any device so that the spray can be directed effectively to every part of the tree. Much more powerful appliances are needed where many large trees are to be cared for, and a recent bulletin of the New Haven experiment station confers a public service by describing an outfit constructed by Stephen Hoyt's Sons, of New Canaan, Connecticut, where it has been used for two seasons with success.

A portable steam-engine of eight or more horse-power, with a double-acting force-pump and a tank holding two hundred and fifty gallons or more, are mounted on a stout wagon with a platform large enough to accommodate an engineer. An

indicator connected with the force-pump shows the water-pressure, and a number of outlets, four, six or eight, are connected with as many lines of hose as may be practicable. Hose guaranteed to stand two hundred pounds pressure to the inch can be had of the Mineralized Rubber Company of this city, at twelve cents a foot. The McGowan nozzle, made at Ithaca, New York, and costing $1.10, is the best for producing a fine spray, and with 180 pounds of steam-pressure it throws a shower vertically for thirty feet or more. Some form of agitator should be used to keep the materials forming the poison-drench uniformly mixed in the tank. Besides the horses needed to bring this apparatus into position, a driver who can operate the agitator, an engineer and four or more, sometimes as many as eight men, to manage as many lines of hose, with an assistant to charge the tank, constitute an effective force. A man with creepers ascends a tree, carrying a stout cord, and choosing a good position in a crotch hauls up a line of hose and fastens it to the limb so that by holding the hose near the end he can direct the nozzle on every side. When the power is applied, the poison-spray, by skillful handling of the nozzle, is quickly applied to all parts of the foliage. To avoid waste of material the nozzle is held only a moment toward any one point, and two or three minutes at the most are required to finish the work of a large tree. While two or more men are directing the spray into as many trees, the same number are climbing adjacent ones, so that the engine and its attendants are fully occupied.

The first spraying should be made in May as soon as the leaves are half-grown, to destroy the beetles before they deposit their eggs; the second in June, when it is seen that the eggs which have been laid are hatching out. This is the most effective method of combating this pest, and it should be kept up for several years. Trees which lose even more than half of their sound leaf-surface may survive the attack for one year, but they will be destroyed beyond remedy by the beetles and worms that will attack them next year unless a well-organized campaign for their suppression is undertaken early next spring.

If the spraying of the trees is impracticable, efforts must be made to destroy the pupæ on or beneath the trees. This is done by sprinkling the kerosene emulsion over the ground under the trees through a watering-pot. The application does not injure the grass, and it should be made in sufficient quantity to saturate the soil where the pupæ exist. By examining the ground, the grass, the falling leaves, etc., under the trees the pupæ can be found, and the proper time for applying the emulsion, as well as the extent of ground which demands treatment, can be ascertained. The soft yellow pupæ in this latitude will be found on the ground from the middle of June to the middle of July or later. The application should be made as soon as they are observed, and repeated, if necessary, to destroy them. To be thoroughly effective this method should be practiced every year. The rough outer bark of the tree for some distance from the ground should be scraped, as many pupæ are likely to be concealed in the crevices, and the scrapings should be burned or drenched with kerosene. Many ascending worms can be intercepted by a band of hay an inch thick and eight inches wide secured to a scraped trunk at a convenient height from the ground by the aid of a six-inch girth of cheap cotton cloth, which is first tacked by one end to the bark, and, after packing the hay under it around the tree, is fastened at the other end by pins. As often as the hay becomes stocked with larvæ and pupæ the band (not the naked bark) is hammered with a mallet, which crushes most of the vermin. The hay, with any live insects, is then burned and replaced by a new band.

New Haven, Conn. *S. A.*

Transplanting Kalmia latifolia.

TO move plants of Kalmia latifolia from their native woods and use them for beautifying public grounds has been considered a difficult operation, and, undoubtedly, it is, unless proper care be exercised in the work. At Twin Oaks, the estate of Gardiner Hubbard, Esq., during the past winter the gardener, Peter Bisset, has been successful in moving about four thousand plants from the surrounding woods and placing them along drives and walks among such plants as Rhododendrons, Indian Azaleas and Japanese Conifers. The Kalmias at the time of lifting were from a foot to eighteen inches high. The work was done, as weather would permit, from the middle of November to the end of December. During all of that time the ground was wet, many of the plants being moved when the snow was on the ground. Care was taken to have the soil in which they were planted as much resembling that in which they were growing as possible; if a hard stony patch was struck, the holes were prepared beforehand with soil containing a large amount of vegetable humus. All of the plants were moved with as large roots as possible. Notwithstanding the hot dry spells of the past few months, there have been only a few dozen deaths among the plants; the remainder are in a wonderfully good state of health, having made growths which compare very favorably with those of plants growing naturally. All the flower-buds were nipped off just as soon as they could be got at. Mr. W. R. Smith, of the Botanic Gardens, has also successfully moved a lot of Kalmias from their native wilds, but the plants in this instance were smaller. As soon as received they were potted into four and five inch pots and plunged in a cool frame for a year, where they have made a good growth, filled the pots with roots, and are now in good condition for planting out this fall.

Botanic Garden, Washington, D. C. *G. W. O.*

The Coral-trees.

THE Erythrinas, or Coral-trees, unfortunately so seldom seen in our gardens, are among the most showy flowering plants of their order. They are chiefly subtropical trees and shrubs with large trifoliate leaves and long terminal or axillary racemes or spikes of scarlet flowers of various size and shade. Of course, none, except, perhaps, the beautiful Cherokee Bean, Erythrina herbacea, is hardy in any of the northern states, but a few of the exotic species may be successfully grown for summer decoration in the garden, either for the sake of the rich glossy foliage or because of their gorgeous flowers. The best of these and the easiest to cultivate successfully is E. Crista-galli, a species with herbaceous shoots, flowering during the summer or early autumn months, according to treatment and location.

The Coral-trees are widely different in growth and habit. Some are arborescent species, indigenous to the Cape, the East Indies and the South Sea Islands; others are frutescent or herbaceous. These latter are common in the West Indies, and are represented in the United States by the above-mentioned Erythrina herbacea, a small and delicately beautiful plant common in the Pine-lands of the south from Florida to Carolina and Virginia.

The herbaceous forms, which annually throw up strong, succulent shoots terminating in a long and brilliant raceme of flowers, should be stored in a dry, cool place during winter until the frosts are over, when they may either be simply planted out in a very rich and well-dug border in a sunny position, or they may be potted and started in a greenhouse in moderate heat, to be planted out as early as the weather will permit. After planting in the open air these kinds will generally take care of themselves and flower profusely in season, provided the soil is rich and the plants are not suffering for want of water. In France, where Erythrina Crista-galli and especially E. Bidwillii are largely grown for the market, the plants are started in gentle heat and planted out quite early in beds which are mulched with a deep layer of well-decayed horse-manure. Here they are cared for during the summer, watered profusely during dry spells, and the shoots are tied to neat sticks so as to render the plant even and uniform. From three to five shoots are allowed on each plant. The plants are lifted and potted in September or October before the flowers expand, and when established are sold in the open markets and by florists for window decoration.

The woody species produce their flowers from the young wood of the previous year, and care should be taken not to prune the plants until the flowering season is over. When the season's growth is finished, the plants are gradually dried off and allowed to lose their leaves. In this dormant state they are stored in a cool, dry place until early in the season when they are looked over, cleaned, and potted if necessary. They should be started in a moist atmosphere and about seventy degrees of heat. Watering must be plentiful, and the plants require all the sunlight that can be had so early in the season. The beautiful flowers soon develop, in advance of the leaves. After flowering, the young shoots are trimmed back to a couple of eyes, which will develop strong flowering shoots for the following year. In the mean time, the leathery, glossy leaves make the plants quite ornamental without flowers. Erythrina corallodendron is the chief species treated in this manner. E. Indica is an evergreen tree chiefly grown in botanical gardens. The variety Parcellii has variegated foliage and is very ornamental. These are grown on without interruption the whole year.

All Erythrinas require rich soil, an abundance of water during the growing season and a warm, sunny position. They are propagated by means of herbaceous cuttings, which are taken with a heel and rooted in bottom-heat.

The best varieties for outdoor use, besides Erythrina herbacea, are E. Crista-galli and E. Bidwillii, an intermediate form. For conservatory use, E. corallodendron, E. Humei and E. Indica Parcellii can be recommended. The whole genus is strikingly beautiful and deserves to be represented in every garden.

Short Hills, N. J. *N. J. Rose.*

Notes on Bedding Plants.

THIS is a good time to make an estimate of the value of certain plants for bedding—a judgment which will be found useful when future plans are to be considered.

The improved Cannas have, no doubt, been largely instrumental in the brighter appearance of many gardens, and the improvement of these plants still continues in some directions at least. The flowers of several of the later varieties are larger and of better form than those of their predecessors, although the foliage of many is scarcely equal to that of some of the varieties of fifteen or more years ago. Prominent among the newer Cannas are Queen Charlotte and Columbia, the former of the Madame Crozy type, though with a wider edging of yellow to the petals, and the latter of a richer and brighter color than Alphonse Bouvier, and also more dwarf in habit. Both these varieties seem to be good growers and bear an abundance of large flowers in trusses, which continue in good condition for a long time. Several new varieties in the style of Captain Suzzoni and Florence Vaughan—that is, having yellow flowers, more or less marked with red—are also promising.

Strobilanthes Dyerianus seems to endure the full sunshine well and keeps in fairly good color. The purplish sheen of its foliage is valuable as a contrast with other plants, though the habit of the plant is somewhat weedy when compared with Acalypha.

In the Croton-beds some of the richest colors are found just now in the following varieties: Queen Victoria, Dayspring, Hillianum, Evansianum, Veitchii and pictum; but many others may be equally gorgeous during the coming month.

Begonia Vernon is useful either in sunny or in shaded locations, though I think the contrast between its flowers and foliage is more pleasing when the plants are in partial shade, for, under such conditions, the leaves are less bronzy and the flowers are larger.

The new silver-leaved Geranium, known as Mrs. Parker, is a plant of much promise, and will probably be extensively planted hereafter. Its variegation seems as good as that of the famous old Mountain of Snow, but the plant is more dwarf, stands the sun admirably, and has the additional advantage of bearing on short stems very compact trusses of bright pink double flowers.

Torrenia Fournierii makes a good plant for a partly shaded border, giving an abundance of bright flowers from June until frost, but, being an annual, it is useless to go to the trouble of taking cuttings in the fall, as one may do with T. Asiatica, for either of these can be readily raised from seed sown in early spring in a warm house.

Salvia patens is particularly effective in a mixed border with its abundant and graceful spikes of bright blue flowers at a time when flowers of this color are not overplentiful.

Holmesburg, Pa. *W. H. Taplin.*

Cauliflower for Winter.

IF a supply of this vegetable is wanted about the holiday season the seed should be sown no later than the first week in September. We prefer to sow it in flats and prick the seedlings out, either singly in three-inch pots, or into flats again about three inches apart. Some sow the seeds thinly in cold frames and transplant into the benches when large enough; either way will answer, provided the plants have plenty of room, with sufficient light and air to prevent them from becoming drawn.

A forcing pit, with the benches two to three feet from the glass and where a night temperature of fifty-five degrees can be maintained, will be found a suitable place to mature the crop. The soil, good sod earth, with a fair dash of well-rotted manure, should be got together a few months before it is required for use, and turned over at least twice, and a sprinkling of lime worked through it at the last turning to discourage worms and insects. The benches should be deep enough to allow one inch of drainage and five of soil. The latter should be packed moderately firm when the plants are put in. Water should be applied sparingly at first, and only around the plants, until the roots have taken good hold of the soil, after which a more plentiful supply can be given; but overwatering must be carefully guarded against, as the plants are sure to become inactive if the soil is allowed to become in any way soured. Air should be admitted both at top and bottom on all favorable occasions so as to maintain a day temperature of about seventy degrees, and the atmosphere of the house should be kept moderately dry, especially when the heads are nearing maturity. Aphides are the most troublesome enemies, but they can be kept in check by having a few tobacco stems spread over the surface of the soil. It is a good plan to make a successional sowing of seeds about six weeks after the first and have them in pots so they can be planted in where the others are taken out, thus keeping up a supply for several weeks from the same bed. This later crop will need to be strengthened by occasional applications of liquid-manure.

As to varieties, we have seen nothing to surpass Henderson's Early Snowball, which produces good-sized, well-formed heads, is excellent in color and flavor, and of a dwarf, compact habit. From a desire to make the greatest possible use of the space at command one is often tempted to plant a little too close, but crowding is always injurious, and we consider fourteen inches each way quite close enough to mature good-sized heads.

Tarrytown, N. Y. *William Scott.*

Rosa rugosa.—I never saw this shrub fruit so freely as it has been doing this year, and its bright scarlet hips clustered thickly among the shining dark green leaves make the plant just now as beautiful an object as when it is covered with flowers in June. In the groups of shrubbery by seaside cottages and hotels it seems to be especially useful, and it endures the salt winds with the utmost cheerfulness. In large parks and gardens, where it can be left to itself, it sometimes reaches a height of eight or ten feet, and it is then most picturesque and effective, but it is rather more floriferous when kept dwarf by annual pruning. Altogether, this is one of the very best of the shrubs which have come to us from Japan.

Madison, N. J. *N. R.*

Correspondence.

Peach-growing in Nebraska.

To the Editor of Garden and Forest:

Sir,—Nebraska is not in the Peach belt, and cannot be considered a peach-growing state; yet, perhaps, it can furnish as good an example of success in this line as many other states apparently much more favorably situated. One of the leading features of the summer meeting of the State Horticultural Society this year was a visit to the orchards of J. M. Russell & Son, who have about 150 acres devoted to this fruit near Wymore, in the south-eastern part of the state, close to the Kansas line. This is a favorable location both as to general climate and also because the land here is quite rolling and the advantage of a higher elevation can be secured. It is equally true that there are hundreds of other farms in the state quite as well adapted to the growth of peaches, and success in this instance only serves to demonstrate what can be done by studious, systematic attention to one given line of work. Messrs. Russell & Son occupy the position of pioneers in this industry, and, like Hale Brothers, of Connecticut, have shown the possibilities of their own region. Their planting began in 1880, and has gradually increased till the present time. Their first crop was harvested in 1887, but consisted of only 140 bushels. The trees were old enough to bear four years earlier, but had been killed by hard winters, so that the beginning of the undertaking was not altogether promising. From that time forward, however, they have secured a crop every other year, the largest one being in 1891, when they harvested a little over 6,000 bushels. The present crop, though good, is not a heavy one. Much of their work has been of necessity experimental, as there were no precedents for guidance, and the early results were not as good as they can confidently expect the future ones to be with their present knowledge. Many of the varieties planted proved wholly unsatisfactory in this climate, even though they give the best of satisfaction in other places.

As a first early variety, Alexander has proved the most profitable. It is too perishable and ripens too unevenly to ship well, but for the home-market it is excellent. Following this come Hale's Early and Early Rivers, the latter a large white peach, not equal to some others in quality and appearance, but the fruit is of good flavor and the tree is a reliable bearer. Hale's Early is more satisfactory here than in many sections of the east, because in this dry climate there is little difficulty

from the fruit-rot. This is one of the worst varieties to rot whenever that disease is present. Coolidge's Favorite is one of the best of the free-stones. It increases in size rapidly just at the ripening period. Hill's Chili is another most reliable kind. When asked to recommend one variety likely to succeed over the widest area and under the most varying conditions, Mr. Russell named the Wright, but he adds that it is late and rather poor in quality. This is a seedling obtained from W. F. Wright, of Johnson County, Nebraska. It comes true to name from the seed in nearly every case. Many well-known varieties, such as Crawford and Mixon, though hardy in wood, are tender in bud and prove a failure in this climate. The firm is testing a number of seedlings, some of which are very promising. One of these, known as Russell's No. 1, is the first free-stone to ripen. It is a seedling of Hill's Chili, grown next to Alexander. It closely resembles Alexander, but ripens about four weeks later.

The orchards receive the best of cultivation up to the middle of August. Not a weed is to be seen anywhere. The method of training would very likely be the first thing to attract the attention of an eastern grower. The trees are allowed to branch right at the ground, and are headed back moderately at the annual pruning, so that they are not over twelve or fifteen feet high, and in most cases the lower limbs lie directly on the ground, or at least partially rest on it. This thoroughly protects the trunk of the tree or does away with it altogether, and no serious injury comes to these limbs in cultivation, as a casual observer would expect.

The fruit is marketed in ten-pound grape baskets with raised covers, and at the time of the visit—July 25th—it was retailing at fifty cents a basket.

Agricultural College, Lincoln, Neb. *Fred W. Card.*

Plant-breeding.

To the Editor of GARDEN AND FOREST:

Sir,—Opinions may differ as to the best work for the experiment stations, and while having the utmost admiration and respect for Professor Bailey's horticultural views, yet his reply to Professor Goff's plea for more attention to plant-breeding by the stations (see page 318 of your current volume) should not go unchallenged. My claim is that there is fully as much scientific exactness required in breeding plants as in breeding animals, and that the analogy between the two is not superficial.

Professor Bailey's failure to succeed in the combination and fixation of the characters of Squashes, Gourds and Tomatoes, so that they will continue to reproduce themselves from seed, is no criterion for the production of new varieties in perennial species; for these, when produced by intelligent combining and selecting, can be multiplied practically without further variation. The tendency in all plants is to vary when placed under new and strange conditions. The best results of these variations, when selected and combined in one individual plant—which is readily accomplished in most cases—may prove of inestimable value; and in the perennial we have the transcendent advantage that the improved variety may be multiplied by division a million times, each part retaining the unimpaired qualities of the original.

It may be true that our eyes are dazzled by the reports of creations in plants "through the foresight of the operator," and that "time will discover the merits of all pretensions," but does any one believe that the Munson Grapes, the Carman and Dawson Roses, the various hybrid Orchids and a thousand other new flowers and fruits were produced in any other way except by "the foresight of the operator," just as truly as in the case of any mechanical or chemical combination? True, most of the processes of Nature are slow, quiet and unobtrusive, but not necessarily so. An intelligent combination of several forces in one useful direction will often produce immediate results which never could have been obtained otherwise.

A kernel of corn—if the right variety has been selected—when placed under the proper conditions of heat and agitation, is not very slow to unfold into a greatly changed product. Unless, however, we have some knowledge of the proper combinations, the desired result would be very uncertain; exactly the same rules apply to the creation of new forms throughout the vegetable kingdom. Not only can distinct varieties of superlative value be produced "by the foresight of the operator," but, as I believe, distinct and permanent new species which will reproduce themselves from seed, generation after generation, with as little variation as is the case with original wild ones.* A careful study of the matter, combined with field practice, will convince the operator that there are fixed laws in the breeding of plants as in other natural forces, and that the more we learn of these laws the more certainly we can control results.

Santa Rosa, Calif. *Luther Burbank.*

* For a more complete elucidation of the subject, see paper on "New Fruits and Flowers," read at the last meeting of the American Pomological Society.

Plant-breeding Once More.

To the Editor of GARDEN AND FOREST:

Sir,—Professor Bailey, in some comments on an article of mine (page 318), says that "man does not have it in his power to summarily produce a new variety with any degree of certainty." In dealing with wild plants in which we have no well-marked varieties to begin with it is true that we must wait patiently for chance variations; but in plants of which we already have more or less distinct varieties, I believe it is possible, by making use of the same kind of tact employed by the breeders of animals, to produce varieties possessing special qualities. I have done this in two instances myself. In both cases I had a definite idea at the outset of what I desired to accomplish, and though the immediate results of the crosses made were far from what I aimed at, continued planting and selection through several years have developed the varieties I sought with as much of fixity as the average vegetable variety possesses.

It seems to me that Professor Bailey's plea, "we must make more of the varieties we have," is really a plea for more plant-breeding. Of course, we ought to develop and improve the varieties we already have, but if we "make the most" of them we must also form new combinations of desirable qualities through cross-fertilization. It is my conviction that some of our experiment station workers can do much better service for horticulture in this line than in the simple testing of the varieties already in our catalogues.

Experiment Station, Madison, Wis. *E. S. Goff.*

Recent Publications.

Wayside and Woodland Blossoms. By Edward Step. Frederick Warne & Co., London and New York.

This is a pocket guide to British wild flowers, constructed somewhat on the plan of Mrs. Dana's popular manual. It contains descriptions of about four hundred species, and colored figures of one hundred and seventy-five species. Neither drawing nor coloring is in the highest style of art, but the pictures will certainly serve to identify the plants described, and the text is rather more accurate, and contains less irrelevant matter than that of many books of this kind which have been published on this side of the water. Americans with little knowledge of botany will probably find this a helpful guide when they wander through the mother country if they wish to know the names of the wild flowers they encounter. They may be surprised to find that many flowers with which they are familiar at home, such as the Marsh Marigold, the Wood Sorrel and the Harebell, are figured in this little book as inhabitants of Great Britain also, and it ought to interest them to know that many of our commonest weeds, such as Shepherd's Purse, Chickweed, Ox-eye Daisy and Bittersweet, which are also figured among British wild flowers, are not natives of America, but emigrants from Europe.

Notes.

Mr. William Scott, of Buffalo, was elected President of the Society of American Florists at its late meeting in Pittsburg last week.

All the blossoms dropped from the trees of Osbeck's Sumach, Rhus semialata, var. Osbeckii, hereabouts ten days or a fortnight ago, but many of the Sophora trees in Central Park are still covered with flowers, although they came into bloom before the Sumachs did. This long season of flowering is a strong point in favor of the Sophora.

Mr. J. H. Hale writes to the *Fruit Trade Journal* that there are more than half a million fruiting Peach-trees in Connecticut this year, and since this has been a favorable season for northern orchards the output in that state will reach three-quarters of a million baskets of fancy fruit, and one-third of this is enough to supply the local demand. A few peaches of the Mountain Rose variety are now ready for market, Early Crawfords are just ripening, but the great bulk of Oldmixon,

Late Crawfords, Stump and the like will be at their best in Connecticut during the first half of September.

A good many of the hardy Speedwells have little ornamental value, but, as the season of its flowering has come around, we once more call attention to Veronica longifolia, var. subsessilis, which is altogether the most showy of the herbaceous kinds and one of the best of summer flowers. It is more compact and robust than the species and surpasses it in the color of its flowers. It grows two or more feet high, is bushy, and bears bright amethyst-blue flowers in terminal and axillary spikes six or eight inches long. Like other Veronicas, this plant enjoys a warm and sunny place and rich soil. Even in small gardens, where there is room for only the best plants, a space should be kept for this Veronica.

The Trumpet-weed or Joe Pye-weed (Eupatorium purpureum) is one of those sturdy composites which make an important feature in our late summer scenery along water borders and in moist woodland glades. Under favorable conditions it grows ten feet high or more, with a compound corymb of flowers often two feet long and almost as thick through. These immense heads, with their purplish scales and flesh-colored flowers on the tall stems, several of which grow from a single root so as to form large masses, make altogether an impressive picture. Although so large, this can hardly be called a coarse plant, as it is pleasing in appearance even when examined close at hand.

A law has been enacted in Michigan which compels the owners of fruit-trees and vines to spray them with appropriate insecticides and fungicides under penalty of a fine not exceeding fifty dollars, or imprisonment not to exceed sixty days, or both. The evident purpose of this law is to compel negligent farmers to do their full share in suppressing injurious insects and plant-diseases, a work which can only be done by coöperation. Three commissioners appointed by the selectmen of any township are authorized to notify farmers whenever insect or fungous pests are found in their orchards or vineyards, and if farmers fail to spray their trees or vines the commissioners are to do the work at the expense of the town, which can recover costs from the owner.

There is a law in Ohio which directs the superintendents of county or township roads to cut Thistles, Wild Parsnips, Burdocks and other noxious weeds that are growing along the highways between the fifteenth and thirtieth days of June, the first and fifteenth days of August, and the fifteenth and thirtieth days of September each year. The experiment station of that state has recently sent out a bulletin for the especial use of road officers in order to secure information as to the condition of the borders of roads and railroads, and to ascertain to what extent the law is enforced which provides for the early and repeated cutting of noxious plants. Enactments of similar character have been passed in many of the states, but we never yet have seen such a law enforced over any considerable area.

All persons who care to inform themselves as to the amount of protection against injurious insects which is given to our fruit-trees by birds, ought to read the bulletin of Mr. E. H. Forbes, lately published by the Massachusetts Board of Agriculture. It is very plainly shown here that birds do a very useful work in destroying the eggs of many kinds of insects, and that the most dangerous pests of orchards, like canker-worms, bark-scale lice and tent caterpillars, are largely held in check by our common song birds, and that one of the best ways to secure a fruit crop is to encourage birds to live in our orchards. It is very evident that the winter birds which eat the eggs of insects ought always to be encouraged to inhabit our fruit orchards, and that the summer birds which feed upon larvæ are also of great value, and they should be protected and fostered until they become abundant.

The gardens of New Jersey and Long Island are now furnishing most of the vegetables that the markets of this city demand, and, owing to exceptionally favorable weather, the supply is so ample that buyers can usually get what they want at their own figures. A few choice products like well-grown Brussels sprouts command fancy prices, but a dozen bunches of the best new carrots sell for twenty-five cents at retail; extra cauliflower, from ten to twenty cents a head; Romaine lettuce, five cents a head, and Boston lettuce, fifty cents a dozen; egg-plants, five to ten cents each; red cabbage, ten cents a head; okra, thirty cents a hundred; Lima beans and green peas, sixty cents a peck; Hackensack melons, $1.50 a dozen, and so on through the list. The fruit season is also at its height, and the markets and street stands never looked more beautiful. California is sending late Crawford peaches, Heath Clings, Orange Clings and McDevitts, while high-grade red and yellow kinds are coming from Maryland, Delaware and New Jersey. The Hudson River vineyards are supplying Delaware, Niagara and Worden grapes. Virginia is still sending some fine Concords, and the Ives is already ripe in New Jersey. A few Damsons and Reine Claude plums are coming from western New York, but beautiful Bradshaws, Kelseys, Burbanks, Fellenbergs, Columbias and Coe's Late, from California, make the great bulk of plums now sold. Of the dozen kinds of apples in the market the highest prices are brought by Alexanders, followed in order by Duchess of Oldenburg and Gravensteins. Great numbers of pears are coming into the city, but prices for the better kinds rule high because many of them are going into cold storage.

The woodpeckers have been subjected to much adverse criticism by farmers and fruit-growers, and Professor Beal, assistant ornithologist of the Department of Agriculture, who has been studying them, has recently published a preliminary report on the food of these birds, from which it appears that some of the species, at least, destroy many injurious insects. From an examination of the stomachs of 679 of these birds of seven species it was found that three-quarters of the food of the downy woodpecker consists of insects, few of which are useful, while it eats practically no grain. The hairy woodpecker also eats a trifling amount of grain, but it eats many beetles and caterpillars. The flicker, more commonly called the high-holder in the middle states, is a great destroyer of ants, and, although it eats some fruit, a great proportion of this is wild berries. Altogether, it would be hard to find three other species among our common birds with fewer harmful qualities, and they should be protected in every way. Every farmer and landholder should especially try to preserve the flicker, which species is most liable to destruction. The red-headed woodpecker consumes more beetles in proportion than any of the others, but some of these are of the predaceous species, and this should be set down against the bird. It has a taste for corn, too, and for fruit. The red-bellied woodpecker does damage to oranges in certain localities in Florida, but eats quantities of ants and beetles. One bad trait of the yellow-bellied woodpecker is its fondness for the sap and inner bark of trees, but it is not probable that forest-trees are extensively injured; the bird, however, has a taste for Apple-trees, too, and it might do much harm to orchards. The pileated woodpecker is more exclusively a forest bird than any other, and its food is mainly of forest products, such as the larvæ of wood-boring beetles and the wild fruits. It is emphatically a conservator of the woods.

The Hale Orchard Company planted more than a hundred thousand Peach-trees on six hundred acres of land, near Fort Valley, Georgia, in the autumn of 1891 and the spring of 1892, and the resident superintendent, with thirty or forty negro assistants and sixteen mules, has kept the orchard thoroughly cultivated for three years. The early frost of 1894 destroyed the prospects of fruit at the first blossoming, and this year about fifty men were employed during April and May thinning out the surplus fruit. By the 20th of June three hundred and fifty hands and sixty mules were kept employed in picking, packing and moving four thousand crates every day. Owing to the destruction of the orange crop in Florida last winter, numbers of extra workers on fruits applied for labor, so that there was an abundance of the best kind of help. In the marketing season something like three hundred bushels of overripe, ill-shapen and scarred fruit are rejected every day, and the perfect peaches are graded by women and girls and packed in four-quart baskets, six of which fill a carrier. The crates when labeled are hauled to the railroad in spring wagons with canvas covering to protect them from dust and rain, and at the station they are loaded into refrigerator cars which hold from 525 to 600 crates each. The cost of picking, packing, freight, etc., amounts to $500 a car, so that the eighty carloads of fruit sent north from this one orchard during the season cost for marketing $40,000. Mr. J. H. Hale, who gives these figures in the *American Agriculturist*, says that the leading peach in that section is the Elberta, but extra-early sorts like Alexander are also largely grown. The first really good peach to ripen is the Tillotson, which comes on about the middle of June. After this the best peaches are St. John, Mountain Rose, Lady Ingold, Elberta, Belle of Georgia and Late Crawford, which rounds out the season about the first of August. The peach crop of Houston County alone gives employment to three thousand people, and all the roads leading to the railroad-stations are lined during the picking season every day with wagons of every sort hauling fruit to market.